

REMARKS

The present response amends claim 1 and requests reconsideration of the rejected claims.

Objection

Claims 1-8, 11 and 12 are objected to, because Si(OR₃)₃ in claim 1 should be OSi(OR₃)₃ (the left hand oxygen atom is underlined to emphasize the difference). This mistake in claim 1 is the result of a typo in an earlier amendment and is corrected herein. It does not narrow the scope of the claim because it merely corrects a typo such that the scope of this element corresponds to original claim 1.

Rejection

Claims 1-6, 11 and 12 are rejected under 35 U.S.C. 102(e) as allegedly being anticipated by Akiyama, US 6,329,461. Also, claims 7 and 8 are rejected as allegedly being obvious based on this reference. These rejections are respectfully traversed.

In summary, the coating composition according to the claimed invention contains a glycidyl-functional acrylic polymer. In contrast to the claimed invention, the resulting compositions of Akiyama do not contain a glycidyl-functional acrylic polymer. This is explained in more detail below.

US 6,329,461 (Akiyama) relates to aqueous coating compositions, see column 1, line 7. These coating compositions can be applied to a substrate and subsequently dried at room temperature, see column 13, line 15. For promoting the curing of coatings, a curing agent may be added, see column 9, lines 3-6. The compositions are obtained by subjecting an aqueous emulsion to polymerisation, see column 2, lines 12-36. Three types of emulsions are described.

Emulsion type 1

Before polymerisation, the aqueous emulsion comprises (see column 2, lines 12-22):

- a polyalkoxysiloxane (A) as described at column 2, lines 43-66,
- an unsaturated monomer (B), which may be an acrylate (column 3, lines 28-52),
- an emulsifier (C), and
- a polymerisation initiator (D), for instance benzoyl peroxide or azodisisobutyronitrile (column 7, line 4 and 26).

Emulsion type 2

Optionally, an unsaturated monomer (E) is present in the above described aqueous emulsion, see column 2, line 23.

Emulsion type 3

Alternatively, the aqueous emulsion comprises before polymerisation (see column 2, lines 27-33):

- a partial condensate of a polyalkoxypolysiloxane (A) or a tetraalkoxysilane (A') and an unsaturated monomer (E),
- an unsaturated monomer (B),
- an emulsifier (C), and
- a polymerisation initiator (D).

Akiyama states that after polymerisation, the coating composition is mainly composed of emulsion particles having a network structure. This network structure is said to be resulting from intercalation or interpenetration of polymers of (A) and (B) and/or a graft structure of the polyalkoxypolysiloxane as resulting from binding of (A) to polymers of (B) via (E). See column 11, lines 47-53.

Thus, polymerisation of emulsion type 1 results in an aqueous emulsion comprising polyalkoxysiloxane polymers (A) and a polyacrylate formed from (B). This composition does not comprise a glycidyl-functional acrylic polymer.

In emulsion type 2, an unsaturated monomer (E) is additionally present in the un-polymerised emulsion. This unsaturated monomer (E) may be a glycidyl-functional acrylate (see column 5, lines 46-51). Due to the large amount of water present in the system, the epoxy groups present will react into hydroxyl groups. When acid is present in the composition, for instance in the form of a hydrolysis inhibitor (F), this reaction will be fast. When there is no acid present, this reaction will be slower.

During polymerisation, converted monomers (E) will react with the polysiloxane (A). And, during polymerisation, much more monomers (E) will be converted and subsequently react with (A) as the reaction takes place at about 40 to 90 °C, see column 11, lines 30-33. After polymerisation, a graft structure of the polyalkoxy-polysiloxane is present as resulting from binding of (A) to polymers of (B) via (E). In case some epoxy groups are still present after polymerisation, these will be lost due to the large amount of water in the system. Hence, the resulting composition does not comprise a glycidyl-functional acrylic polymer.

To prepare an aqueous emulsion type 3, unsaturated monomer (E) is pre-reacted with (A) or (A') as described in column 5, line 52 to column 6, line 49. Monomer (E) may be glycidyl functional. All epoxy groups of such monomers are converted. First, they are converted to hydroxyl groups due to the water and the acid in the reaction mixture. Secondly, all or part of these hydroxyl groups react with (A) or (A').

The resulting partial condensate of (A) or (A') and (E) is used as emulsion type 3. Polymerisation of this emulsion results in an aqueous emulsion comprising at least a graft structure of the polyalkoxy-polysiloxane as resulting from binding of (A) to polymers of (B) via (E). This is because the monomers (B) react with the partial condensate of (A) or (A') and (E). The resulting composition does not comprise a glycidyl-functional acrylic polymer.

The coating, as claimed, is, thus, not anticipated by nor made obvious by Akiyama and withdrawal of the rejections is respectfully requested.

Respectfully submitted,



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